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2001

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The Third Dimension of the IS Curriculum: The Importance of Soft Skills for IT Practitioners

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Abstract

This research reports some preliminary findings of an investigation into academic and soft skills that IS/IT practitioners regard as important in new graduates. The results confirm the work of others indicating that soft skills such as teamwork are seen as far more important that the hard skills such as programming. Surprisingly, skills in traditional business subjects such as accounting and economics were rated relatively lowly. A possible explanation for an apparent conflict with anecdotal views and current findings is offered.

INTRODUCTION

It is often asserted that the preparation of IS professionals should cover studies in the body of technical skills laid down by various professional bodies [Underwood, 1997; Gorgone, 1999; Cheney, 1990]. It is also often held that employers are seeking a more rounded graduate who has well-developed soft skills in addition to a sound technical repertoire [Trauth, 1993; Van Slyke, 1997]. This stated desire for business skills is often interpreted by academics to mean that more business subjects such as accounting, economics, business finance, and marketing should be taught alongside traditional hard skill subjects such as analysis/design and programming in particular languages. Somehow the other "soft" areas such as teamwork, communication skills and others are "picked up" in transit.

The research findings reported here present some evidence that "business subjects" such as those mentioned above do not equate to the business skills that employers of IS graduates are seeking in new hires. We present some evidence that IS practitioners see lesser value in the more formal business subject areas that often form the core of a business IS degree and more value in "soft skills".

The research presented here looks only at the perceptions of IS practitioners. It is part of an on-going project that investigates the views of other major stakeholders including employers, currently enrolled students, and academics.

METHODOLOGY

A multipart questionnaire was devised that sought views on the importance of academic areas that are included in the curriculum of many IS degrees along with a number of others that may be regarded as useful adjunct subjects in an IS degree programme. Demographic data including age, gender and aspects of employment were also solicited.

Web-based survey distribution was used. Mehta & Sivadas (1995) demonstrated that e-mail based surveys generated response rates comparable to those of postal surveys but significantly faster, at lower cost and of a higher quality. On the other hand Tse etal (1995) in an internal survey of Hong Kong University staff, experienced a much lower return rate for e-mail surveys (6%) compared with conventional mail (27%) which they attribute to the possibility of participant identification with e-mail. Comley (1996) found comparable response rates from the two methods. Comley also indicated that electronic data collection methods are often self-selecting due to recipients irregularly checking email messages and consequently have the potential to introduce bias. He points out however that although this is a problem for representative samples it is less of a problem for targeted groups as in the case of the present research.

The questionnaire was set up using Microsoft FrontPage 2000. Data were captured using Microsoft Access 2000. Electronic surveys have the advantage being pre-coded and free of ambiguity of response in that only one response per item can be selected. They have the disadvantage that they risk missing those who do not have access to computers and the web. This was not seen to be a problem for the group being surveyed. Invitations to participate were sent out by email to 1008 IS professionals throughout Australia during the first half of 2001 and who had attended job fests in the previous twelve months. Twenty eight unusable responses were eliminated

from the analysis. A total of 136 usable replies were received and this represented an overall response rate of 13.5 percent – acceptable for unsolicited surveys of this type but lower than was hoped for. Analysis of the data was carried out using SPSS R10.

There were two sections pertaining to academic preparation of graduates. These two sections separately covered the technical areas of an IS business degree and the other academic areas that are not specific to IS. A seven point Likert scale (1= irrelevant through to 7 = essential) was used to measure the rating for each question. Mean scores and the standard deviation for each question was computed in SPSS and displayed in descending order. These results are presented in Table 2. A third section investigated the importance of a range of so-called "soft skills" and these results are presented in Table 3.

RESULTS

Table 1 shows the distributions by the respondent's principal work function

	Frequency	Percent
Applications Programming	34	25.0%
System support	32	23.5%
Systems programming	4	2.9%
Network administration	10	7.4%
Project administration	13	9.6%
IT sales	2	1.5%
IT staff supervision	6	4.4%
Education/training	5	3.7%
Web development	12	8.8%
Recruiting/staff placement	2	1.5%
Consulting	16	11.8%
Total	136	100%

Table 1: Principal work function

ACADEMIC SUBJECT AREAS

The results shown in Table 2 clearly indicate that core business subjects such as Accounting (4.13), Economics (3.63), Law (4.07) , and Statistics (4.18) rate rather low in importance amongst practicing IS professionals. With a score of 4 being the midrange and representing a neutral response, these "core" business subjects are seen as less important by practitioners in the discipline of IS. Management (5.54), Ethics (5.07) and Organizational Behavior (4.90) rate close to five or higher indicating these are somewhat more important – especially Management which rates in the fairly important to very important range. These results are unexpected given the popular claims that IS graduates need more understanding about business. Communications and Report Writing, often regarded more as a "soft" skill rather than an academic discipline in its own right, was rated the most important (6.02) of the academic areas, supporting many anecdotal reports that employers value and seek these skills. It should also be noted that a subject titled "Communications & Report Writing" has been included in some business degree programmes in the past.

	Mean	Std. Deviation
Communications & Report Writing	6.02	1.05
Analysis & Design	5.87	1.09
Client server applications	5.67	0.92
Business Applications	5.65	1.11
Use operating systems	5.60	1.10
Database design	5.55	1.25
Management	5.54	1.03
Project Management	5.43	1.16
Knowledge of PC apps	5.43	1.22
E-Commerce/E-business development	5.33	1.23
Apply OOPs	5.26	1.25
LAN & Data Comms	5.22	1.27
Large System experience	5.12	1.19
Business Ethics	5.07	1.57
Web design/development	4.96	1.54

Organisational Behaviour	4.90	1.41
Data mining/Data warehousing	4.76	1.36
Apply 3GLs	4.70	1.41
CASE applications	4.51	1.32
Knowledge base/Expert systems	4.49	1.42
ERP implementations & operations	4.48	1.39
Marketing	4.35	1.52
Business Finance	4.30	1.50
Operations Research	4.29	1.26
Mathematical Modelling	4.25	1.44
International Business	4.24	1.59
Business Statistics	4.18	1.40
Accounting	4.13	1.55
Business or Commercial Law	4.07	1.55
Psychology	3.70	1.76
Economics	3.63	1.50
Foreign Languages	3.15	1.78

Table 2: Importance of academic subject areas - mean scores (*N=136*)

SOFT SKILLS

Table 3 shows that "soft" skills, in the main, are rated substantially higher than hard academic skills.

	Mean	Std. Deviation
Work as a team	6.52	0.66
Problem solving skills	6.44	0.57
Work under pressure	6.42	0.78
Quickly acquire new skills	6.37	0.64
Independently acquire new skills	6.35	0.72
Meet deadlines	6.35	0.68
Work independently	6.27	0.94
Time management	6.21	0.95
Written communication skills	6.18	0.85
Problem definition skills	6.18	0.74
Willing to undergo ongoing professional dev.	6.18	0.89
Handle concurrent tasks	6.16	0.81
Client focussed service ethic	6.16	1.00
Able to interact with people of different background	6.13	0.73
Think creatively	6.08	0.89
Able to work with people from different disciplines	6.04	0.74
Accept direction	6.03	0.89
Information seeking skills	5.83	0.96
Oral presentation skills	5.79	1.07
Place organizational objectives first	5.73	0.95
Business analysis skills	5.63	1.03
Leadership potential	5.18	1.08
Good sense of humor	5.15	1.35
Able to prepare multimedia presentations	4.73	1.25

Table3: Importance of soft skill – mean scores (*N=136*)

Every "soft" skill except one achieved a mean rating exceeding 5. Seventeen (out of 24) of the "soft" skills was rated in excess of 6 by practitioners. Closer inspection of Table 2 and Table 3 reveals that the highest rated IS area, Analysis & Design, (5.87) rated below all but seven of the soft skills in Table 3. Teamwork, problem-solving skills, ability to work under pressure and ability to quickly acquire new skills independently, are each rated very highly, close to essential, by IS practitioners. Only one soft skill, ability to prepare multimedia presentations, rated relatively lowly. It could be argued that this is not a true soft skill.

DISCUSSION

Overall, the data indicate that IS/IT practitioners perceive soft skills as very important whilst hard skills, especially some of the more traditional core business subjects such as accounting or economics, are rated lower, perhaps expecting a satisfactory level of technical skill as a given. No major attempt has yet been made to

control for the various roles IT practitioners can occupy. However, the demographic data in Table 1 indicate there are reasonable representations from areas that require differing hard and soft skills, thus increasing the confidence that the observations reported here are real.

This does not imply that the results presented here are in conflict with other studies. Rather, we argue that the traditional business subjects are not the business skills primarily sought in studies of the IS marketplace. Does the IS marketplace really want practical business skills and appreciation of business processes in addition to those provided in these traditional core areas? The high level of response to the importance of Business Applications (mean = 5.65) may be an indication of a widespread but unrealized desire for "soft skills" not normally developed in core business courses. Further clarification will be sought in subsequent work. This may suggest that in reality it is not more "core" business subjects that are needed but an appreciation of business processes and activities that are not always covered in IS degree programs. Analysis of the data is continuing and comparisons with other stakeholder groups are currently underway.

Finally, some caution should be adopted when generalizing the results presented here. Electronic surveys, by their nature are accessible only by those with access to the appropriate technologies. Whilst we would expect that this problem would be lower amongst IS/IT professionals than in the general population because of the nature of the work they do, there is a prospect of survey bias being introduced.

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